

To:	John Alessi	From:	Aleece D'Onofrio, P.E.
	Town of Arlington		Stantec
Project/File:	Arlington - Mass Ave / Appleton Safety and Accessibility Improvements (179411056)	Date:	January 10, 2024

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**Reference: Arlington | Mass Ave / Appleton | Response to Conceptual Design Comments**

As part of the Conceptual Design Phase for the Mass Ave / Appleton corridor improvements the following is a summary of the comments received from the Town of Arlington and Stantec's responses, which are consistent with the Preliminary Design Submittal.

**Comments dated 4/6/2023 from Mike Rademacher, Public Works Department:**

1. At what point should we be approaching property owners about increased responsibilities they may incur as a result of the project? For example, some driveways are proposed to become significantly longer which will require additional maintenance on the part of the owner, not just in the winter but in the future when the surface needs to be repaired or replaced. How has this increased responsibility been addressed in similar projects elsewhere especially if the property owner is not in favor of the changes.
  - a. **Response:** Now that a preliminary design plan has been developed, Stantec recommends that the Town engage with property owners, business owners, and even other Town Departments to solicit feedback on the design and understand if there are any outstanding concerns. Several public engagement opportunities were open for comment, and the preliminary design plans will assist in progressing the conversations regarding maintenance with abutters. Our experience in other communities has generally been positive due to the improved public space adjacent to their homes.
2. On side street intersections and driveways, vehicles will be blocking the bike lane waiting for a gap in traffic to enter Mass Ave. This seems unavoidable but very disruptive to bike travel. Is this the standard for sidewalk level bike lanes?
  - a. **Response:** This is correct and standard; vehicles should be looking for bicycle and pedestrian traffic before driving over the bike lane or sidewalk, as pedestrians and the uncontrolled bicycle movements have the right-of-way. The vehicle should then yield to the uncontrolled vehicle movements in the road, as they also have the right-of-way in this scenario.

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3. Does the bike lane have a design speed? The concept has several abrupt horizontal alignment changes (around crosswalks and bus stops) that do not seem appropriate for certain speeds. Are travel speeds posted on bike lanes?
  - a. **Response:** MassDOT recommendations for separated bicycle facilities are made based on a 10-15mph design speed. Consistent with the *MassDOT Separated Bike Lane Planning & Design Guide* (2015), where it is necessary to laterally shift the separated bike lane, the shift should generally occur gradually, at no greater than a taper of 3:1. Each taper in the preliminary design meets this guidance and does not exceed the maximum 3:1 taper. Speed limits are not typically posted on bicycle lanes and not included as part of this project.
4. The bus stop lengths seem short. MBTA guidelines indicate 80' is standard and 60' is the minimum. Whichever we include, please indicate the front and rear door locations on the plans to ensure they do not fall directly on the proposed bike lane.
  - a. **Response:** Consistent with the *MBTA Bus Stop Planning and Design Guide* (2018), the bus stop lengths proposed meets this guidance. Based on typical bus dimensions and door locations, the bus stop area is designed with adequate space to accommodate both front and rear doors. The available space accommodates an ADA landing pad area meeting the minimum 5'x8' dimension at the front door, as well as a rear door clear zone meeting the minimum 4'x10' dimension spaced 19' from center of front door to center of rear door. The space also accommodates the recommended clear zone of 4' deep along the curb line for the length of the bus.

The door zones are not typically shown on construction plans. Stantec will prepare a graphic that marks up these zones within the bus stop area for further discussions with the MBTA as the bus stop design is finalized. Additionally, the bus shelter shown may be modified by size or location within the stop as the bus stop design is finalized.
5. The concept of separating the bike lane seems to significantly increase the conflict points between cyclists and pedestrians. This occurs especially at the crosswalk locations. When cyclists are in the road they must yield to pedestrians in a crosswalk. When pedestrians are crossing the bike lane, is consideration given to who must yield and how that is communicated (signed?).
  - a. **Response:** Separating the bike lane from the roadway significantly decreases the conflict points between cyclists and vehicles. There are crosswalks striped over the bike lane to channel pedestrians to cross in a crosswalk. Under Massachusetts General Law, bicyclists and motorists must yield to pedestrians within a crosswalk at uncontrolled locations. The preliminary design identified some bicycle-specific signing, but the MUTCD does include additional regulatory signing that may be included in the final design to help mitigate these scenarios, such as R9-6 "Bicycles Yield to Peds" as the bike lanes approach the more heavily trafficked pedestrian areas.

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6. MassDOT recommends a buffer between a sidewalk level bike lane and adjacent pedestrian zone. Given the extremely heavy pedestrian activity due to the Ottoson School, this should not be overlooked. If horizontal space is not available, a vertical break is an option based on the guidance document. Please indicate how we will accomplish this in the design moving forward.
  - a. **Response:** The bike lane and sidewalk are proposed as two different materials (hot mix asphalt and cement concrete) to visually distinguish with color. A pavement pattern/stamped concrete strip is proposed between the bike lane and sidewalk to physically distinguish the difference in zone.

Section 3.5 of the *MassDOT Separated Bike Lane Planning & Design Guide* (2015) states, "In constrained locations where physical separation is desirable because of moderate to high pedestrian demand, for example town centers and urban areas, curb separation is preferable to ensure pedestrians do not walk in the bike lane, and bicyclists do not ride on the sidewalk. However, it is also possible to achieve the desired separation when the sidewalk and bike lane are at the same elevation and are directly adjacent to each other by providing a high degree of visual contrast between the two. This can be accomplished through the utilization of different materials for each zone, stained surfaces, or applied surface colorization materials."

**Comments dated 11/16/2023 from TAC & ABAC via John Alessi:**

1. Noted on Plan near Richardson Avenue - In general, is there a design speed for this downhill portion? Would it be 15mph, and then know that bicyclists will travel at 20mph?
  - a. **Response:** Consistent with MassDOT guidance, recommendations for separated bicycle facilities are made based on a 10-15mph design speed.
2. Noted on Plan at Dunkin Donuts driveway - Concerns about bicyclist visibility at both of entrances to the Dunkin' Donuts parking lot. Maybe we can request that they implement an Enter and Exit only?
  - a. **Response:** We agree that this would be an improved condition and would simplify the flow and conflict points through this area. The Town should discuss this with Dunkin Donuts, as it is a private property's access to Mass Ave. Should they agree, we can include signage and pavement markings within their parking area as part of this project.
3. Noted at Mass Ave crosswalk near Clark Street - Concerns about bicyclist speeds approaching this chicane, as well as potential conflicts with pedestrians at the same time. Since the chicane is meant to be traffic calming, might consider warning signage leading up to the pedestrian crosswalk or even textured surface (but not like a speed bump or rumble strips).
  - a. **Response:** Additional signage of this nature has not been included yet at the preliminary design stage. To avoid cluttering the corridor with signage, we want to evaluate the design as it stands, solicit feedback on the Preliminary Design Submission, and determine the best locations to propose additional warning signage during the Final Design Phase. The

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preliminary design identified some bicycle-specific signing, but the MUTCD does include additional regulatory signing that may be included in the final design to help mitigate these scenarios, such as R9-6 "Bicycles Yield to Peds" as the bike lanes approach the more heavily trafficked pedestrian areas.

4. Noted at Mass Ave crosswalk near Clark Street - ABAC members suggested that we include signage here warning of the intersection, bus stop, and increased pedestrian traffic. There was even an idea to have a light that flashes during afternoon school release.
  - a. **Response:** Similar to the previous response, additional signage of this nature has not been included yet at the preliminary design stage. To avoid cluttering the corridor with signage, we want to evaluate the design as it stands, solicit feedback on the preliminary design Submission, and determine the best locations to propose additional warning signage during the Final Design Phase. The preliminary design identified some bicycle-specific signing, but the MUTCD does include additional regulatory signing that may be included in the final design to help mitigate these scenarios, such as R9-6 "Bicycles Yield to Peds" as the bike lanes approach the more heavily trafficked pedestrian areas.
5. Noted at Bus Stop location on south side of Mass Ave - Although the bike lane itself will be a different material/color, ABAC members wanted to know if it can be made a more distinct color in high-conflict pedestrian areas.
  - a. **Response:** Additional coloring of the bicycle lane to increase visibility is possible to include and consistent with the *MassDOT Separated Bike Lane Planning & Design Guide* (2015), however, it's important to have some consistency with treatments town wide. Additional treatment options at this location can be reviewed and discussed with Town representatives during the Final Design Phase.
6. Noted at Bus Stop location on south side of Mass Ave - Implement barrier between bike lane and bus stop area.
  - a. **Response:** When there are not space constraints, a barrier is typically included between the bike lane and bus stop area. Due to the constrained space at this location and requirement to maintain a minimum dimension of 5'x8' clear area for the bus stop landing pad, a vertical obstruction would need to be offset a minimum of 1' from the edge of bike lane. A barrier offset by 1' would require either a sub-standard bus stop landing area (decreasing the width to 7') or reducing the bike lane to a 4' width. A vertical barrier treatment has not been included at the bus stop locations in order to meet current design standards and acceptable offsets to vertical objects.
7. Noted at Mass Ave Crosswalk on west side of Appleton Street - Is it possible to tighten the double yellow line here so that more sidewalk space can be created? This could make a difference at school dismissal time when more kids will congregate in this area.
  - a. **Response:** Yes, the eastbound travel lane has been shifted by a few feet to slightly offset the through movement to allow for additional space at sidewalk level between the bike lane and roadway.

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8. Noted at Appleton Street stop line – Make sure there is a no turn on red sign here.
- a. **Response:** No turn on red is intended at this location and signs are proposed to be posted at this location.

9. Noted at widened 'plaza' area between Appleton Street / Appleton Place - Concerns over students congregating in this area and conflicting with the bicyclists who have a green light. ABAC members expressed how a bicyclist might come down the hill, hit the green, and then have to stop because of students. Their proposal is to reduce the length of the plaza and keep the bike lane on road.

- a. **Response:** The design in this area has been modified to essentially keep the bike lane on the roadside, with a vertical separation of sloped patterned pavement. The entire level waiting area for pedestrians is behind the bike lane to discourage pedestrians from standing in the bike lane while waiting to cross Mass Ave.

Stantec did review opportunities to provide exclusive bicycle phasing, but there are concerns over queue lengths and delays due to the signalized capacity for all users. The *11<sup>th</sup> Edition of the MUTCD* (released December 2023), Section 4H.01, states bicycle signal faces shall not be used to control bicyclists concurrent with potentially conflicting motor vehicle traffic.

The current design intends for bicycle movements on Mass Ave. to operate concurrent with motor vehicle traffic.

10. Noted at Mass Ave between Forest Street and Quinn Road - Concerns that there is not enough buffer between parked cars and bike lane (risk of dooring). Explained that we could reduce buffer on south side, but then downhill bicyclists would have less buffer with moving vehicles. I believe we also confirmed that we can't pull the bike lane closer to the private property line, and then position it back to swerve around the tree?

- a. **Response:** Due to constraints of space within the public way and existing tree locations along this segment of corridor, the widths dedicated to each 'user' provides an accessible space for each. As stated in the *MassDOT Separated Bike Lane Planning & Design Guide* (2015), Section 3.4.1, "Street buffers may be narrowed to a minimum of 2 ft. in constrained conditions, or a minimum of 1 ft. alongside a raised bike lane." Meandering the bike lane around the trees to increase the buffer to parked cars in some areas would create more conflicts between bikes and peds. Additionally, the larger buffer along the eastbound side of Mass Ave provides additional space between cyclists and vehicles traveling side by side, while the smaller buffer along the westbound side of Mass Ave is narrower along the stationary/parked vehicles. The buffers proposed do meet the minimum standards for constrained conditions.

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11. General Note – Can the bike lane be on road throughout the corridor?

- a. **Response:** As part of this project's initial planning throughout 2022, a series of public meetings (both in person and virtual), listening sessions, and online feedback forms were offered to the public to gather feedback. Through the engagement process and during these open forums, participants selected the design priorities they most preferred to see in the final design of the Mass Ave / Appleton Street Corridor. Protected Bicycle Lanes and Separated Bicycle + Vehicle Circulation were two of the highest voted features and most in line with the goals for the corridor. Through the conceptual design phase, raised bicycle lanes were the selected design to pursue and presented to the public in subsequent meetings.

Regards,

**STANTEC CONSULTING SERVICES INC.**



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Attachment: Preliminary Design Submission (Plans and Estimate)